

02544.002085

PATENT APPLICATION

Applicant submits that the Examiner has misconstrued the disclosures of the two cited references, which do not in fact teach varying the angles formed between opposed surfaces of the knife and their adjacent guiding surface portions (which form the knife edge) as required in the claims as presently pending.

For the convenience of the Examiner reproduced below is Claim 7 with reference numerals inserted corresponding to the surfaces and angles of the knife as disclosed in the application.

7. A chipper knife for use in a rotating wood chipper disk, said knife comprising a knife body (2) having first and second opposed body surface portions (15, 15'), at least one cutting edge (6) having first and second ends, and first and second angularly related guiding surfaces (11, 13) which extend at angles to said first and second body surface portions respectively (15, 15') and intersect to define said cutting edge (6), said first guiding surface (11) having a varying angle (β) along its length in relation to its associated first body surface portion (15) with the angle adjacent said first end being greater than the angle at the second end and continually decreasing from said first to said second end; said second guiding surface (13) having a varying angle (α) along its length in relation to its associated second body surface portion (15') with the angle adjacent the first end being smaller than the angle at the second end and continually increasing from said first to said second end, whereby the cutting edge angle (θ) between the guiding surfaces is essentially constant along the length of the cutting edge while the cutting edge is closer to said second body surface portion at said first end of the cutting edge than it is at the second end.

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As described in the response to the prior Official Action and particularly in connection with the enlargement of Fig. 5 of the present application attached at Tab A to the prior Amendment, the exterior angles α and β between the surfaces 13, 15' and 11, 15 of the knife of this application vary along the length of the knife to form the cutting edge 6 so that the angle θ between the surfaces 11, 13 remains constant. As a result, the cutting edge is tilted from one end of the knife to the other to achieve the advantages of the invention described in the application as originally filed.

The structures of the two prior art references cited by the Examiner simply do not contain these features.

Attached at Tab 1 is an enlarged copy of Figs. 8 and 9 from the Taft patent. Included in Tab 2 is a transparent overlay of Fig. 8 from the patent.

The enlarged drawing from the Taft patent at Tab 1 has been marked in blue pen with reference numerals corresponding to the surfaces 15, 15', and 11, 13 from the present application. It has also been marked with the angles α , β and θ as used in the drawing at Tab A of the last amendment. Careful consideration of Figs. 8 and 9 (which represent cross sections at different points on the cutting knife shown in Fig. 7, specifically sections YY and ZZ respectively), reveals that the angle β is constant along the knife's length. The angle α is also constant at any given point along the width of the knife. By overlaying the transparency of Fig. 8 on Fig. 9, it is quite clear that the angle β in both Figures 8 and 9 remains the same despite the two different positions along the width of the knife at which the sections shown in those figures are taken.

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It is not clear to applicant's counsel why the Examiner thinks the angles α and β change along the width of the knife in Taft. Perhaps confusion is caused because the cutting edge in the knife in Figs. 7 - 9 of Taft is inclined from one end to the other of the knife and the section XX is not taken along the same inclined plane. In addition, the knife in Figs. 5 - 9 of Taft is curved in cross section, and the beveling or grinding tool which is used to sharpen the cutting edge is moved along the cutting edge at a different radius of curvature than the curvature of the knife itself. Moreover, the knife edge on one side (15') is only ground over part of the width of the knife. Nevertheless, the grinding tool is moved along the knife edge at the same angle with respect to the interior and exterior surfaces of the knife along the width of the grinding path.

The knife of Figs. 5 - 7 in Taft is used in turning lathes to form beads or corners on wooden boards. In doing this, the knife is mounted on a rotating head such that it rotates in a plane perpendicular to the plane of the paper on which Figs. 6 and 7 is shown. Accordingly, the section between the points G and H (shown in Fig. 7) on the knife will move in parallel to the rotation plane of the knife. Therefore the portion G and H of the knife edge must be flush with the interior surface of the knife and the cutting edge is wholly on the outside surface of this portion of the Taft knife. If that were not the case, the knife would generate considerable friction against the wood in this portion of the knife edge.

From the cross hatched sections seen in Figs. 8 and 9 in the patent and as shown in the drawings at Tab 1, the exterior beveled surface has the same angle with respect to its adjacent knife surface portion as the interior beveled surface has to its outer surface portion of the knife. The only difference is that at section YY the knife is beveled the same amount on the

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interior and exterior, whereas at the section ZZ (between the points G and H), the knife is beveled only on the exterior surface. Thus the angle at the cutting edge, i.e., the angle corresponding to the angle θ between the exterior and interior surfaces "guide surfaces" which define the cutting edge is much smaller in Fig. 9 than in Fig. 8. This is also contrary to the claimed invention, wherein that angle remains constant along the length of the knife.

Accordingly, the structure of the Tafl reference does not maintain a cutting edge angle which is constant and does not vary the angles of the guiding surfaces (that form that cutting edge) with respect to the adjacent body surface portions so that the cutting edge is inclined from one end to the other of the knife, as defined in the claims in this application.

At Tab 3 attached hereto an enlarged copy of Figs. 1, 2 and 3 of the Weddell reference is provided. This drawing has been marked in blue with additional reference numerals 11, 13, 15, 15', and the angles α , β and θ to correspond to the surfaces and angles of applicant's invention bearing those reference numerals as shown at Tab A of the last amendment.

The Weddell reference is directed to a means for adjusting the position of the knife 13 in the holding structure. The knife of Weddell is triangular in cross-section and the patent contains very little description of the knife cutting edge. However, it is clear from Fig. 5 that the angle of the surface 13 relative to the surface 15' remains constant along the width of the knife defined by the surface or leg 15' of the triangular form. Likewise the angle formed by surface 11 to the leg of the triangular form not seen in Fig. 5 is also constant. That is contrary to the claimed features of applicant's invention.

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More specifically, it is also noted that the claims in this case clearly require that the knife have first and second opposed body surface portions 15, 15'. Weddell simply does not have that structure. As seen in Fig. 4 of that patent, the Weddell knife is triangularly shaped. Thus, it does not have opposed first and second body surface portions. Therefore, the angle α as shown in Figs. 1, 2 and 5 of Tab 3 is always constant as between the surface 13 and the surface 15'. Likewise, the angle β formed between the surface 11 and the leg surface of the triangular knife body identified by the line 16 and the dotted line at the right end of Fig. 5 never changes either. Moreover, that leg is not "opposed" to the surface 15'.

Still further, Weddell clearly states that the blade of his knife is "plain sided", except for the niche 26. In contrast, because the angles α and β vary along the width of the knife of the present invention, the timber guiding and chip guiding surfaces (11, 13) are twisted, not "plain sided". (See Specification page 5, lines 1-9). Thus the surfaces 11, 13 form a shape like that of a helix or a portion of a twisted bar of steel and not plane surfaces.

Accordingly, neither of the cited references have a cutting edge formed by first and second angularly related guide surfaces which extend at different or varying angles to their adjacent first and second body surface portions, along the length of the knife from one end to the other. Neither reference discloses a first body portion defining an angle relative to the adjacent guiding surface at one end of the knife which is greater than the angle therebetween at the other end and continuously decreasing from one end to the other. Nor do they disclose a second guiding surface defining an angle relative to its adjacent body portion at the first end of the knife which is smaller than the angle at the second end and continuously increasing from the first to the

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second end so that the cutting edge angle θ remains the same while the cutting edge is closer to the second body surface portion at the first end than at the second end. While Weddell shows the cutting edge 6 being closer to the leg 16 of its triangular shape at one end than it is at the other that configuration is not achieved by a structure that corresponds to what is defined in the claims of this application.

Accordingly, applicant submits that the Examiner has misconstrued the references and has not recognized the structural differences between the claimed invention and the prior art.

Applicant notes that the Examiner in the rejection has taken the "position" of positioning the knife of Taft horizontally would show the varying angles as claimed, but it is not seen how changing the position of a solid knife structure in any way changes the angles identified as α and β in the structure of the knife which remains the same regardless of how it is positioned. Accordingly, applicant respectfully requests the Examiner reconsider the rejection in light of these arguments and the explanation of the references, and pass this application to allowance.

In view of the above amendments and remarks, this application is believed to be in condition for allowance, and such action is solicited.

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Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,



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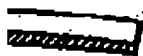
TAB 1



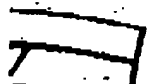
Y-Y

Fig. 8. Fig. 9.

6.

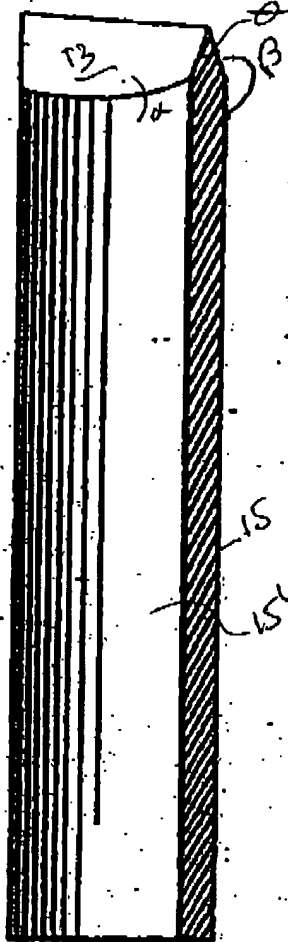


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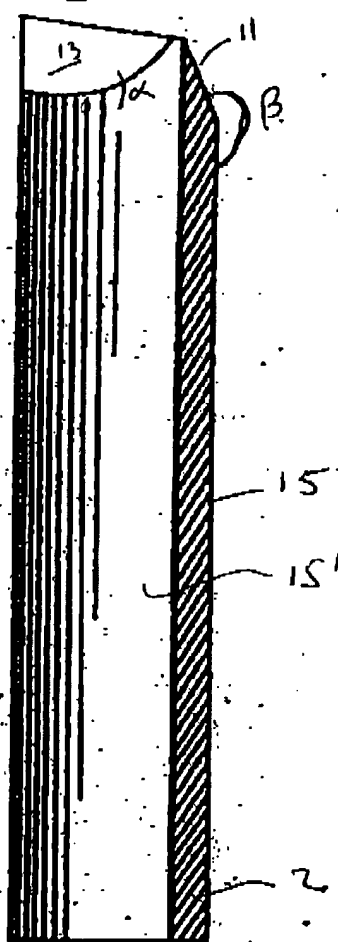


h.

B



Y-Y



Z-Z

Inventor

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Atty.

TAB 2

Fig. 8.



TAB 3

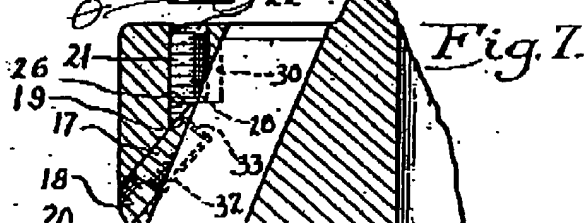
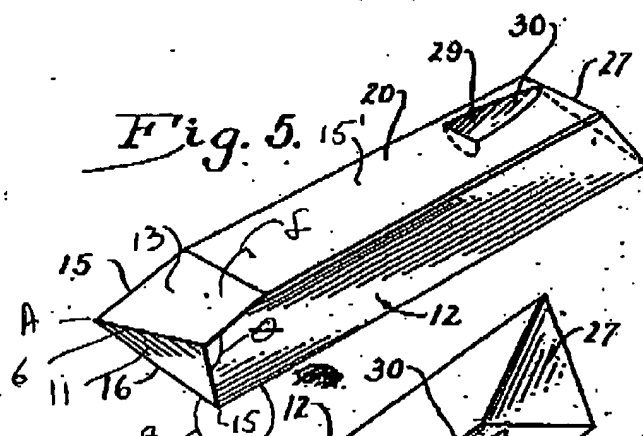
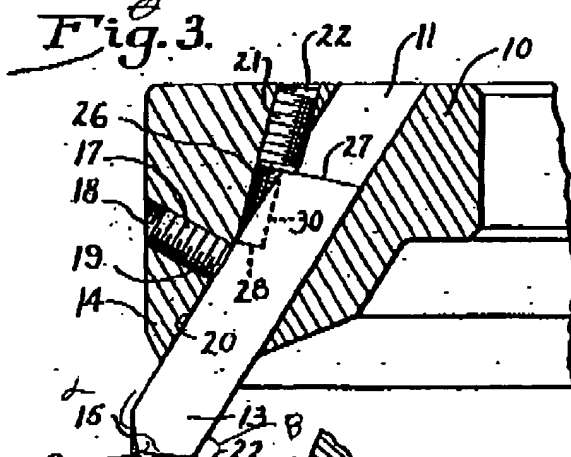
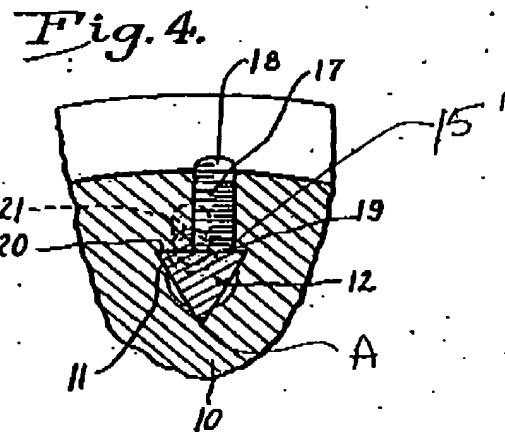
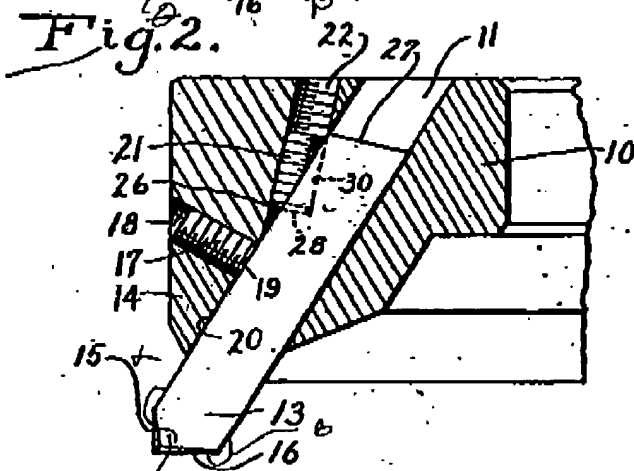
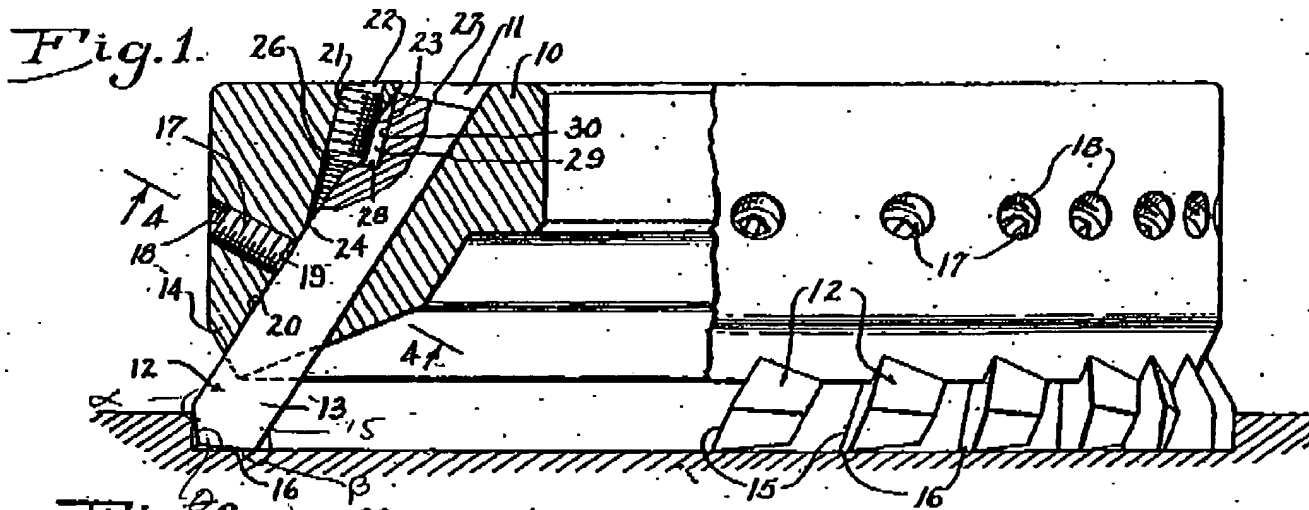
Sept. 25, 1945.

R. R. WEDDELL

2,385,750

METAL REMOVING TOOL

Filed May 10, 1943



INVENTOR